

# MINUTES

**INSTALLATION RESTORATION PROGRAM  
RESTORATION ADVISORY BOARD MEETING  
ABERDEEN PROVING GROUND, MARYLAND**

**THURSDAY, 25 SEPTEMBER 2003**

**7:00 p.m. – 9:30 p.m.**

**EDGEWOOD SENIOR CENTER**

**RESTORATION ADVISORY BOARD MEMBERS PRESENT AT THIS MEETING:**

Mr. Kevin Barnaba	Mr. Ted Henry
Ms. Mandi Elliott-Bird	Mr. Karl Kalbacher (Maryland Department of the Environment)
Ms. Glenda Bowling	Mr. Ken Stachiw (Army Co-Chair)
Mr. Roy Dietz	Mr. Frank Vavra (U.S. Environmental Protection Agency)
Ms. Christine Grochowski (Community Co-Chair)	Ms. Ruth Ann Young

**RESTORATION ADVISORY BOARD MEMBERS NOT PRESENT AT THIS MEETING:**

Mr. Arlen J. Crabb	Mr. Thomas McWilliams, Jr.
Mr. Greg Kappler	Mr. Dan Pazdersky
Mr. Doug Richmond (Harford County Emergency Operations Center)	Mr. Dennis Warwick

**ENCLOSURES TO THESE MINUTES:**

- 1: Roster of Meeting Attendees
- 2: Agenda
- 3: October 2003 Calendar of Events
- 4: Unexploded Ordnance (UXO) Incident Reports
- 5: Aberdeen Areas Study Area Update Presentation Materials

## **I. EXECUTIVE SUMMARY**

### **Administrative Comments**

Mr. Ken Stachiw (Chief, Directorate of Safety, Health and Environment (DSHE) Environmental Conservation and Restoration Division (ECRD)) informed RAB Members that Ms. Katrina Harris (General Physics Corporation) would be soliciting available evening dates for the upcoming RAB budget meeting. No public meetings are scheduled for October 2003, but a meeting could be scheduled for the Westwood Study Area. An Operations Security (OPSEC) Task Group Meeting will be planned to discuss how to accurately communicate and distribute information to the public. All Aberdeen Proving Ground (APG) sites remained intact following Hurricane Isabel, with no major damage resulting other than shoreline erosion, and flooding. As in the past, the public is encouraged not to go near shorelines or handle unearthened munitions.

### **Aberdeen Areas Study Area Update**

Mr. Naren Desai (DSHE ECRD Project Officer) provided an update on the Aberdeen Areas Study Area. Topics included Abbey Point Shoreline, Western Boundary, Building 525, Tower Road Site, Michaelsville Landfill, and Aberdeen Areas Risk Assessment Update.

#### **Abbey Point Shoreline**

Mr. Desai stated that Abbey Point is located on the south portion of the Aberdeen peninsula. Assessment and removal of munitions in Piles 3 through 7 began June 2002 followed by shoreline stabilization in December 2002. Unexploded ordnance (UXO) was removed outward from the shoreline as far as possible during low tide. An approximate total of 30,000 munitions and 60 tons of scrap metal were located and removed. Progress was slow due to sensitive munitions, and the disposal process is ongoing. Shoreline erosion occurred at a rate of almost three to four feet per year. Approximately \$2 million of shoreline stabilization has been completed. The shoreline remained intact following Hurricane Isabel. UXO has been discovered in 1,200 feet of shoreline located adjacent to Piles 3 through 7 and a contract for assessment and shoreline stabilization will be awarded in September 2003.

#### **Western Boundary Operable Units**

Construction of the new Perryman Granular Activated Carbon (GAC) System began in April 2002. The plant is expected to be completed in October 2003. The plant consists of 11 vessels, and has maximum flow of 5.2 million gallons per day (mgd). No perchlorate was detected in the Perryman Plant Final effluent for June 2003. Sampling in Harford County Production Wells in June 2003 indicated perchlorate was not being released into the public water supply. Trichloroethene (TCE) levels in monitoring wells HPC-5 and HPC-6 have remained around 5.0 to 6.0 parts per billion (ppb), with no TCE detected in HPC-4. TCE and Royal Demolition Explosives (RDX) concentrations in OU1 wells have dropped to 1.3 ppb from 5.0 to 6.0 ppb.

Weekly monitoring of production wells and finished water for perchlorate is a primary issue at OU2. Aberdeen finished water has maintained a perchlorate concentration of equal to or less than 1.0 ppb. March 2003 sampling indicated a few perchlorate detections in old monitoring wells. A geophysical investigation of OU2 identified several anomalies and buried drums. Geoprobos were used to create a vertical soil profile around drums and anomalies with high perchlorate concentrations. Soil results indicated a perchlorate concentration of 3,500 ppb around Drum 3 while groundwater results indicated a much lower concentration. Further study and increased geoprobe locations are proposed for the area around Drum 3.

### Building 525

Mr. Paul Miller (Waterways Experiment Station (WES)) stated that Building 525 is 700 feet long by 200 to 300 feet wide, and is located along Woodrest Creek on APG. Groundwater sampling in March 2001 revealed a VOC plume with two small areas exceeding 400 ppb. A Chemical Oxidation Pilot Study was conducted in the vicinity of Building 525. The results suggest that reduction is occurring with chemical oxidation, and that some variability is occurring naturally. The planned schedule for Building 525 includes: Pilot Study Report (September 2003), Revised Feasibility Study (FS) Report (December 2003), Proposed Plan (March 2004), and Record of Decision (ROD) (June 2004).

### Tower Road Site

The Tower Road Site is located near Building 361 on Aberdeen Road. Contamination around the Building 361 underground storage tank (UST) well was determined using geoprobes. Monitoring wells were then installed around the UST well, with other monitoring wells located in the area of the Tower Road plume. March 2003 sampling at Building 361 monitoring wells showed high trichloroethane (TCA) and TCE detections in wells 361-2A and 361-4A. The first groundwater sampling event was completed in March 2003 and the second sampling event was completed in September 2003.

### Other Aberdeen Areas

The Draft Final Phase II Remedial Investigation (RI) Report for the Other Aberdeen Areas was submitted for review in March 2003. The Final Phase II RI Report will be released upon completion.

### Michaelsville Landfill

Mr. Miller reported that the Draft Third Post-ROD Monitoring Report has been completed. Recommendations for future Michaelsville Landfill monitoring will be made based on the past five years of monitoring. Long-term ground and surface water trends at ROD monitoring sampling locations show a stable or downward trend for most parameters. Future groundwater sampling recommendations include: decreasing the frequency of sampling to every five years, and changing the analyte classes to volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Inorganics, and General Water Quality. No further sampling is recommended for surface water and sediment.

### Aberdeen Areas Risk Assessment Update

Mr. John Paul (DSHE Project Officer) stated that the Aberdeen Area Human Health Risk Assessment is near completion and comments are currently being addressed. Draft Watershed-based Ecological Risk Assessments will be revised after additional data collection. Fieldwork will begin on sites requiring additional delineation data and development of risk-based Preliminary Remediation Goals (PRGs). PRGs will be used in the FS to determine site-specific cleanup numbers. Based on existing information, approximately nine IRP sites will require significant additional work and there will be proposals for no further action at some IRP sites.

## **II. OPENING REMARKS AND ADMINISTRATIVE COMMENTS**

The September 2003 U.S. Army Garrison Aberdeen Proving Ground (APG) Installation Restoration Program (IRP) Restoration Advisory Board (RAB) meeting was called to order by Mr. Kenneth Stachiw (Chief, Directorate of Safety, Health and Environment (DSHE) Environmental Conservation and Restoration Division (ECDR); Army Co-Chair) at 7:00 p.m. on Thursday, 25 September 2003. The meeting took place at the Edgewood Senior Center located at 1000 Gateway Road in Edgewood, Maryland.

Enclosure 1 to these minutes is a meeting attendance list. RAB Members in attendance received an agenda (Enclosure 2), a RAB calendar of events for October 2003 (Enclosure 3), Unexploded Ordnance (UXO) Incident Reports (Enclosure 4), and a copy of the Aberdeen Areas Study Area Update presentation (Enclosure 5).

Mr. Stachiw asked Ms. Katrina Harris (General Physics Corporation) if dates had been set for the October 2003 RAB Budget Meeting. Ms. Harris replied that no dates have been set as yet. Mr. Stachiw stated that Ms. Harris would solicit evening dates for the Budget Meeting. Mr. Ted Henry (RAB Member) will be provided with budget-related information he requested during the 28 August 2003 RAB Meeting. Mr. Stachiw noted that public meetings are not currently planned for October 2003. However, a public meeting for the Westwood Study Area may be planned in the near future.

Mr. Stachiw stated that the presentation packages for the Aberdeen Areas Study Area lacked the Operations Security (OPSEC) stamp on them. They contained information including well locations, pictures of unexploded ordnance (UXO), and locations of UXO. Coversheets containing the stamp will be provided in exchange for the unstamped covers. Mr. Stachiw requested that RAB members either take the presentations and use them in accordance with Tier 2, or leave them at the meeting in exchange for an approved, reduced copy to be sent by mail. An OPSEC Task Group meeting may be needed to discuss the distribution of this information to the public at large.

Ms. Karen Jobes (IR Program Manager Assistant) stated that all IRP sites were well prepared and remained intact through Hurricane Isabel. Mr. Stachiw stated that the shoreline would be inspected for significant erosion and exposure of munitions or UXO. The Old O-Field treatment plant was not inundated with water, although parts of O-Field were flooded. J-Field and all other operations were secured and did not experience problems. Mr. Stachiw reported that other areas of the base experienced flooding. Spesutie Island was 90 percent underwater. Several operations, excluding clean up operations, were flooded out and had associated water damage.

Mr. Roy Dietz (RAB member) stated that an article in the Cecil Whig informed residents not to pick up any munitions that might have washed ashore during the storm surge. Mr. Dietz questioned the cause of that article and if there was a problem. Mr. Stachiw replied that the Army did not release a statement and the cause of the article is unknown.

Mr. George Mercer (APG Public Affairs Office) stated that he heard of the article on the radio. Mr. Mercer stated that the information regarding munitions resulted from the State Fire Marshal's Office. Mr. Mercer reported that he was unaware of any new UXO releases caused by Hurricane Isabel or any other storms. UXO on shorelines and wetlands has been a problem, and for years people have been instructed not to pick them up or touch them, but to call 911 instead. The public is encouraged not to go near APG shorelines. Mr. Stachiw informed the members that it is unknown if shoreline disposal sites may have been exposed due to shoreline erosion. Mr. Frank Vavra (U.S. Environmental Protection Agency (EPA)) made a comment about public awareness and concern in Philadelphia about ordnance washing up on Delaware beaches.

Ms. Christine Grochowski (RAB Member, Community Co-Chair) asked when an investigation of the shorelines to determine if any new disposal areas were revealed as a result of erosion during the storm would begin. Mr. Stachiw informed the RAB Members that DSHE Project Officers have begun investigating their study areas, but a helicopter flight will view the APG shoreline overall.

Ms. Grochowski asked about the Kings Creek shoreline. Mr. Stachiw replied that the site would be inspected for any erosion problems. Mr. Naren Desai (DSHE ECRD Project Officer) informed the RAB

Members that all Aberdeen Area sites, with the exception of the Bush River Bomb Disposal site, fared well. The Bush River experienced erosion in areas where bombs were removed, and repairs will be made. No bombs were exposed.

Mr. Stachiw stated that shoreline protection installed at Carroll Island worked very well. It is believed that the protection worked well, and without the protection much of the shoreline may have been lost.

After confirming the RAB members had no further comments, Mr. Stachiw introduced Mr. Desai to provide an update on the Abbey Point area of APG.

### **III. ABERDEEN AREAS STUDY AREA UPDATE**

#### **Abbey Point**

Mr. Desai displayed a map of APG showing the location of the Abbey Point shoreline in the south portion of the Aberdeen peninsula. Shoreline erosion has unearthed and released UXO at Abbey Point. Approximately 600 to 700 rounds from Pile 1, approximately 16,000 rounds from Pile 2, approximately 16,000 rounds from Pile 3, and 60 tons of scrap metal have been removed.

Mr. Desai displayed a photograph of the shoreline. Approximately 3,700 linear feet of shoreline had eroded extending from Pile 1 to the woods. Removal of UXO and shoreline restoration have been completed in that area. Ms. Glenda Bowling (RAB Member, Aberdeen Proving Ground Superfund Citizens Coalition (APGSCC)) asked how far out from the shore the remediation extended. Mr. Desai stated that remediation occurred near the shoreline, and as far out as possible during low tide.

Mr. Desai displayed several photographs of UXO found at Piles 3 through 7, and noted that more UXO was exposed as banks eroded away. The UXO items depicted in Mr. Desai's photographs have been removed; however, removal of additional UXO items on the shoreline is ongoing.

Ms. Bowling asked if more UXO was expected to be found following Hurricane Isabel. Mr. Desai stated that he had visited the shoreline and found that the shoreline stabilization stayed intact. The hurricane should not have unearthed more UXO. The only damage occurred to a road washed out by high water.

Mr. Henry asked if UXO on the shoreline remained to be recovered, and if those items were separate from the Piles 1 through 7. Mr. Desai stated that the UXO he was referring to had been collected, deposited onto pallets, and removed. The items were from erosion of Piles 1 through 7.

Mr. Desai displayed photographs of bombs, 100-pound fuzed bombs, and metal debris at low tide along the eroded shoreline. Progress of removal operations was slow due to a number of sensitive munitions. Mr. Desai displayed photos of the road and shoreline. The shoreline eroded so quickly that approximately three to four feet were lost per year and the road had almost washed away. Shoreline stabilization work began in December 2002 with the deposition of stone and rock at the toe of the bank. Approximately \$2 million of stabilization was quickly completed. Mr. Desai displayed a photo of the shoreline as it currently appears from the water, and of the ramp used to pull UXO up during low tide that was eroded by Hurricane Isabel.

Dr. Cal Baier-Anderson (University of Maryland) asked if the photographs were just examples of what was actually found and if more UXO was discovered during the shoreline stabilization. Mr. Desai explained that the photos were examples and a small amount of UXO items were discovered.

Mr. Desai displayed a photograph of the UXO detonation area, and stated that it was unknown whether the UXO was high or low order. The Army carried out scrap disposal. Dr. Baier-Anderson asked if any UXO was filled with chemical agents. Mr. Desai replied that most contained high explosives (HE) or wax fill, and the items did not contain chemical agents.

Mr. Desai displayed a photograph of the adjacent 1,200 feet of shoreline. Erosion is occurring in the area and UXO has been found. A contract will be awarded in September 2003 for stabilization of the shoreline.

Mr. Henry asked how the UXO items were found. Mr. Desai stated that the items were found during inspection, but were random items. A heavy concentration of UXO items was not found. Mr. Henry stated that he was curious about making good strides on Piles 1 through 7, and asked if any type of shoreline assessment has been done in general as far as planning for future wells should an issue arise. Mr. Henry also asked if a comprehensive look at the Aberdeen area shorelines has been done. Mr. Desai stated that it hasn't been done yet, but the next step is to have a contractor assess the whole shoreline of Aberdeen and Edgewood, research the history, and remediate identified munitions. Mr. Henry asked if that would also include the navigable areas of the Aberdeen Creeks and other such areas. Mr. Desai stated that all the shorelines would be studied and marked due to the loss of land in those areas as well.

Mr. Desai displayed slides of trees lying along the Abbey Point shoreline where erosion had occurred and noted that Hurricane Isabel had moved fallen trees from that area. Erosion is a large problem in the Abbey Point area. The Bush River Bomb Disposal Site, already affected by erosion, was worsened when Hurricane Isabel washed away the bank and undercut the road. A contract will be awarded to repair that site. The disposal site no longer contains any bombs.

### **Western Boundary Operable Unit 1**

Mr. Desai stated that Operable Unit (OU) 1 addresses groundwater in the vicinity of the Harford County Production (HCP) wells, along the western boundary of APG Aberdeen Area. A Record of Decision (ROD) was signed in 2000 for moving and reconstructing the Perryman groundwater treatment plant on Harford country property. Construction began in April 2002, with completion projected for October 2003. The post-ROD monitoring plan will be rewritten in November 2003 to incorporate the wellhead protection. Sampling of the treatment plant final effluent in June 2003 indicated no detections of perchlorate.

Mr. Desai displayed a graph depicting the trichloroethene (TCE) levels in monitoring wells HCP-5 and HCP-6. Since August of 2002, TCE levels were approximately 6.0 to 7.5 parts per billion (ppb), and exhibited no major changes. Dr. Baier-Anderson asked if well HCP-4 was on the chart. Mr. Desai replied that, since TCE was not detected at HCP-4, it was left off the chart.

Mr. Henry asked for the TCE detection level. Mr. Paul Miller (Waterways Experiment Station (WES)) stated that the value is 0.5 ppb. Mr. Desai stated that the TCE concentrations detected in the June 2003 HCP-5 and HCP-6 samples were approximately 7.5 ppb.

Mr. Desai stated that TCE concentrations are currently 1.3 ppb at the new plant influent as a result of dilution. The previous concentration of 4.0 to 6.0 ppb has dropped to 1.3 ppb with the connection of additional wells to the plant. The treatment plant will reach a full capacity of 5 million gallons per day (mgd) in November 2003.

Mr. Desai displayed a chart depicting perchlorate concentrations in HCP wells. Perchlorate sampling results have yielded J-values, or concentrations below the reporting limit. Dr. Baier-Anderson asked why well HCP-4 was not operating. Mr. Desai replied that a new fluid drive pump was being tested. All wells are anticipated to be online by November 2003.

Mr. Desai displayed a photograph of the new Perryman GAC Treatment Plant and of the vessels relocated from the old plant to the new plant. A tour of the plant can be scheduled if RAB Members are interested. Mr. Stachiw asked how the plant fared during the storm. Mr. Desai replied that there were no damages or disruptions to the plant, despite flooding around the building.

Mr. Desai displayed slides of 2002 and 2003 TCE sampling results from the Perryman Plant monitoring wells. TCE levels have indicated a decreasing trend in the aquifer. Mr. Stachiw asked about the rate of water movement through the aquifer. Mr. Miller stated that typically water might move one half to one foot per day, and 200 to 300 feet per year. Mr. Stachiw asked if there is a substantially different sample each year. Mr. Miller replied that there was.

Mr. Desai stated that March 2003 perchlorate results yielded only J values. Dr. Baier-Anderson asked for the status of sampling further to the southwest. Mr. Desai replied that it had been discussed. The southernmost well, WB-MW-15B, had the highest J value for March 2003 perchlorate sampling (0.9 J ppb). Tentative plans were made to determine if a large plume exists around the well. However, due to the depth of groundwater in that location, a geoprobe cannot be used, and wells would have to be installed to make the determination.

Dr. Baier-Anderson suggested that the area of concern is not directly around the well, but further downgradient. Mr. Miller replied that not many wells exist downgradient, and the closest well in that direction is approximately several thousand feet away.

Dr. Baier-Anderson suggested that geoprobes should be installed to determine if current wells are located on the edge of a contamination plume. Mr. Miller reiterated that the well is approximately 110 feet deep and a geoprobe cannot be pushed that deep in that area. A well would need to be installed, or a geoprobe could be installed beneath an augured boring.

Dr. Baier-Anderson suggested monitoring perchlorate levels at the other monitoring wells and discontinuing sampling if perchlorate levels are not detected. Mr. Miller stated that the monitoring could be done, despite the distance of other wells.

Mr. Desai displayed a map depicting HCP Well Perchlorate Results for June 2003. Perchlorate results were reported as J values, ranging from non-detect to 0.29 J ppb.

Mr. Henry had a procedural question pertaining to the follow up on the locations of the other wells, and what remains to be done. Mr. Henry was concerned, given the closure of the Technical Assistance Grant (TAG), as to whom a follow up should be with, and how it would be done. Mr. Desai replied that a follow up could be made with Dr. Baier-Anderson, who indicated that she would relay the information to APSGCC. Mr. Stachiw stated that the EPA and Maryland Department of the Environment (MDE) would decide the course of action. The previous suggestion involved the installation of geoprobes in the general vicinity of well WB-MW-15B. However, the status thus far is that geoprobe installation may not be possible. Mr. Desai stated that a meeting could be scheduled or communication could be conducted by telephone.

Mr. Henry asked how the progress would be monitored if the topic was not discussed in the near future. Mr. Stachiw suggested that the issue become an Action Item. Progress information and dialog could then be passed through email. Mr. Henry expressed that he would like to receive an email about the follow up, and a focused map detailing well locations and proposals.

After confirming RAB members had no further comments, Mr. Desai introduced Mr. Miller to provide the update on Western Boundary OU2.

## **Western Boundary Operable Unit 2**

Mr. Miller stated that OU2 addresses groundwater in the vicinity of the City of Aberdeen Production (CAP) wells, and perchlorate is the primary concern. Several production wells are located on and off post, and weekly monitoring of those wells and finished water has been ongoing.

Mr. Miller displayed a graph of City of Aberdeen finished water perchlorate results. Historically, perchlorate levels in finished water have been equal to or less than 1 ppb. The State mandates that the City of Aberdeen notify the public if perchlorate detections in finished water exceed 1 ppb. In August 2003 the sampling scheme was revised to sample finished water weekly, wells 3, 8, 9, and 10 bi-monthly, and the remaining wells monthly. Monthly sampling is alternated with the City of Aberdeen.

Mr. Miller displayed a graph depicting the City of Aberdeen Finished Water Results. The reporting limit (RL), below which the lab will report an estimated value, has decreased. The method detection limit (MDL), below which the lab will report a non-detect, is depicted as a dashed line on the perchlorate results chart. A perchlorate concentration of 1 ppb was reported in September 2002 and March 2003. APG and Aberdeen use different labs for sample analysis, and Aberdeen's lab sets finished water RLs and MDLs at 0.5 ppb. Non-detects reported from the Aberdeen lab are marked on the chart. Points on the chart with attached values were reported from the APG lab and from the Aberdeen lab when at or above the reporting limit.

Mr. Miller displayed maps of OU2 depicting monitoring well locations, and perchlorate results from March 2003. Twelve wells were installed in January 2003, with two wells located at each of six locations. A plume map derived from geoprobes in 2001-2002 was imposed on top of the well location and results map. Results from the monitoring wells generally agree with previous geoprobe data. Perchlorate detections ranged from 0.22 J to 5.4 ppb in old monitoring wells, and from non-detect to 10 ppb in new monitoring well locations.

Mr. Stachiw asked if the location where 4.6 ppb was reported had a previous concentration of 18 or 20 ppb. Mr. Miller confirmed that perchlorate concentrations of 18 to 23.4 ppb had been previously detected at that location.

Mr. Henry asked if the map was a generalized plume map over a specified period of time. Mr. Miller replied that the map is not from a single sampling event. Wells installed to monitor the water table across the area before the perchlorate concern did not accurately detect perchlorate concentrations. For perchlorate monitoring, geoprobes were used to sample at multiple levels in the aquifer for an extended period of time, and the data were used to generate the plume map. The map is thought to be a fairly accurate representation of perchlorate levels. A fluctuating RL also complicated the project.

Mr. Henry asked if the inactivity around the well where 5.4 ppb was reported was due to a lack of perchlorate detections in surrounding geoprobes. Mr. Miller stated that Mr. Henry was correct.

Dr. Baier-Anderson asked if an attempt had been made to correlate perchlorate concentrations to water level data, and if there has been a significant change due to increased rainfall in the past months. Mr. Miller stated that a trend analysis evaluating many variables is difficult but ongoing. A fluctuating RL has also complicated the analysis. Water levels have rebounded from the drought of last year, but a correlation has not yet been generated.

Dr. Baier-Anderson asked if increased rainfall and the shallow water table could result in dilution of the perchlorate contamination. Mr. Miller stated that dilution is possible with the higher water table. Dr. Baier-Anderson expressed concern over perchlorate unexpectedly lingering in the soil. Mr. Stachiw replied that the length of time perchlorate has been present is unknown, and could be only a short duration. Mr. Miller stated that sampling has been conducted in the unsaturated zone, and analysis of the entire scenario is not yet complete.

Mr. Miller displayed maps depicting the area of OU2 geophysical investigation. An evaluation of the primary training area detected a number of anomalies. Studies in nine anomaly locations identified them as seven partially buried drums, possibly containing expended items, and two unknown anomalies. A tenth anomaly site has not yet been studied and remains unknown. Perchlorate was detected in the soil from the surface to a depth of 30 feet in the unsaturated zone around certain anomalies. Several geoprobes were installed around the anomalies and drums to monitor soil perchlorate concentrations.

Mr. Miller displayed a diagram of the sampling profile for geoprobes at the anomaly locations. Soil was sampled in a vertical profile at the surface, and at depths of 2, 5, 10, 20, and 30 feet. Water samples were obtained at the water table depths of 45 and 60 feet. The vertical profile was conducted at distances of three feet and 10 feet in the four cardinal directions from six anomalies, and in three directions from three anomalies.

Mr. Miller displayed a diagram of anomaly and geoprobe soil results. Shallow perchlorate concentrations around the anomalies ranged from non-detect to 15,000 ppb in the soil. The majority of high values detected were located at a depth of either five or ten feet. Perchlorate concentrations detected in the groundwater ranged from non-detect to 3,500 ppb. Groundwater results were not as indicative of source perchlorate concentrations as soil results are due to the vertical movement of water through the soil. Groundwater results are expected to reflect concentrations detected before this geoprobe sampling event.

Mr. Henry asked if the location with a groundwater concentration of 14 ppb is the same location where a perchlorate concentration of 4.6 ppb was located on the plume map. Mr. Miller replied that it was near the same location.

Mr. Miller displayed a plume map depicting groundwater results, with the highest levels indicated. Perchlorate concentrations presented ranged from 0.69 to 3,500 ppb.

Mr. Miller displayed a cross-sectional map depicting soil and groundwater perchlorate sampling results around Drum 3. The locations of the unsaturated zone and aquifer were pointed out. Unlabeled points on the diagram were non-detect samples. Soil perchlorate detection limits were approximately 10 ppb, depending upon moisture content, below which J values were reported. A duplicate sample for the 3,500 ppb location was reported as 2,500 ppb.

A map depicting groundwater sampling results near Drum 3 was displayed. Geoprobe, old monitoring well, piezometer, and new monitoring well locations were explained. September 2003 unvalidated sample data for the new monitoring wells reported perchlorate concentrations around Drum 3 ranging from 1.4 to 1.9 ppb.

A map depicting six proposed geoprobe locations around Drum 3 was displayed. Mr. Stachiw asked for the locations of the production wells. Mr. Miller stated that the wells are located approximately 200 feet from the boundary and approximately 600 feet from Drum 3. The nearest well is located approximately 900 feet from the nearest production well. More geoprobe locations are proposed for approximately 20 feet, and 100 feet WNW from Drum 3.

Mr. Karl Kalbacher (Maryland Department of the Environment (MDE)) asked for the travel distance from the anomaly to the well. Mr. Miller replied that the distance is approximately 600 feet. Mr. Kalbacher asked for the investigation's timetable. Mr. Miller replied that the Health and Safety Plan had been approved, but the area has to dry out before work can commence. Other methods can be employed should the project speed need to be increased. Mr. Kalbacher expressed encouragement that the project move along as quickly as possible.

Dr. Baier-Anderson stated that a concentration of 3,500 ppb was found at an approximate depth of 45 feet and asked if the depths of wells 3 and 4 are around 60 feet. Mr. Miller stated that well 3 is 41 to 63 feet deep and well 4 is 27 to 54 feet deep.

Mr. Henry asked if the area around Drum 3 is flat or has a general slope to the south and east. Mr. Scott Dobson (EA Engineering) stated that the area is low but slopes back up before the boundary to the west. Mr. Henry asked about the eastern and southern areas. Mr. Miller replied that the general slope drops down to the southwest but is generally flat to the east. The high point of the area is located near the road and may be the reason for water collection in that location.

Mr. Kalbacher asked if there is a correlation between soil results and groundwater quality results, and if the perchlorate concentration is bound in the soil and not partitioning to groundwater. Mr. Miller replied that perchlorate is fairly inert, and a correlation between the groundwater and soil detections has not been identified. The majority of maximum concentrations in soil were found between 5 to 10 feet of depth, and the last 10 feet before the water table. Groundwater detections may not reflect perchlorate concentrations in the soil above.

Mr. Kalbacher asked if laboratory soil leaching tests could be conducted to study the result of high soil perchlorate concentrations when stimulated by natural conditions. Mr. Stachiw stated that the information would be valuable, however the tests may not be possible. Contamination age is unknown, and despite current data, more information is needed to determine behaviors and the length of time until contamination reaches the groundwater.

Mr. Vavra asked if it would be possible for EPA to obtain a core soil sample for analysis. Mr. Stachiw replied that the Army is not unwilling, however research for the sake of research can be problematic. A sample could be provided for EPA to conduct the analysis.

Mr. Miller stated that the drums have been removed, the area covered with soil, and capped with plastic. High perchlorate concentrations are located within a 3 foot area from the removed drums, and don't appear to be generally distributed throughout the site in the unsaturated zone. Despite intensive geophysics, a large single source of contamination and other sources of significance have not been identified.

Mr. Henry stated that he was interested in the slope of the area around Drum 3 because he is concerned that the underlying groundwater concentration directly below the source may be 1000-fold less than concentrations seven feet away. Mr. Henry is concerned with the difficulty of locating contamination and

the reason for uncontaminated groundwater directly below the source. Mr. Miller stated that the groundwater samples contain a high perchlorate level, however the reason is unknown. A possible scenario for the contamination is that perchlorate was driven down through the soil and reached the water table.

Mr. Roy Dietz (RAB member) stated that the soil make up is unknown and asked if a possible three-inch clay layer on an angle may have been the cause for perchlorate concentrations at a distance from the source. Mr. Vavra reiterated that soil studies should be conducted to evaluate perchlorate movement and possible complexing with trace materials in the soil.

Dr. Baier-Anderson asked if the sampling was conducted in three or four directions around Drum 3, and if values comparable to the groundwater samples were found. Mr. Dobson stated that sampling was conducted in three directions due to capped soil and inaccessibility of the water table in one direction. A refusal occurred when a cobble layer located above the water table allowed only a depth of 30 feet to be reached, instead of the targeted 40 feet. Mr. Desai stated that sampling in that direction could be repeated to verify a perchlorate concentration of 3,500 ppb.

## **V. INTERMISSION**

At 8:30 p.m., upon the conclusion of the Western Boundary OU2 update, Mr. Stachiw announced a brief intermission. At 8:40 p.m., the meeting resumed.

## **VI. ABERDEEN AREA STUDY AREAS UPDATE CONTINUED**

### **Building 525**

Mr. Miller displayed a map indicating the location of Building 525 along Woodrest Creek on APG. Building 525 is approximately 700 feet long by 300 feet wide and is a site of previous TCE use. Mr. Miller displayed a map outlining the location of Building 525 and a TCE plume derived from March 2001 sampling. Intensive geoprobes used in the vicinity of the building detected higher concentrations of TCE greater than or equal to maximum contaminant levels (MCLs).

Mr. Miller stated that approximately 40 to 45 injection points were implemented in a 120 by 180 foot area of high TCE concentrations during a Chemical Oxidation Pilot Study. The highest total chlorinated volatile organic compound (TCVOC) concentration detected was approximately 13,000 ppb. Mr. Miller displayed a map depicting the change in groundwater TCVOC between May 2002 and January 2003. The majority of wells depicted are temporary wells located in the injection area. Areas of high TCVOC concentrations decreased, while a small number of wells exhibited an increase. The increases may be the result of an existing preferential pathway, and the method of injection from an isolated corner outward.

Mr. Miller displayed a map depicting the change in groundwater TCVOC from March 2001 to January 2003 and the locations of sampled wells. The majority of wells demonstrated a small change in concentration, while a limited number of wells located outside of the chemical oxidation area displayed a decrease in TCVOC concentration. Mr. Stachiw reiterated that the wells exhibiting a decrease in TCVOC concentration were located outside the zone of influence and stated that changes may be occurring naturally.

Dr. Baier-Anderson asked about the level of variation observed in general before the Pilot Study. Mr. Miller stated that reductions have been observed in a six-year period from 1995 to March 2001. Dr. Baier-Anderson suggested that it might be easier to evaluate fluctuations in the injection area relative to

natural variation and decrease over time. Mr. Miller stated that a report on the Pilot Treatment Study would be released in the near future containing changes in the concentration over time. Highest TCVOC concentration levels were unknown until the Pilot Study, however from 1995 to 2001, significant changes have been observed. Mr. Stachiw expressed that an important point to be considered is that wells exhibiting a decrease in TCVOC concentrations were located far outside the zone of treatment influence.

Dr. Baier-Anderson stated that the effects of the injection could not be understood if natural variability in TCVOC concentrations can be observed in the wells. Variability must be taken into consideration to determine if the injections are facilitating degradations. Mr. Miller replied that the greatest decrease was located where the 13,000 ppb concentration was reported before the injection.

Mr. Henry asked how many locations were injected within the injection area. Mr. Miller replied that approximately 60 points of injection were planned for injection twice at each point, with approximately 15 points having refusal. Mr. Vavra asked for a rough estimate of the volume injected. Mr. Miller stated that the total volume of reagent injected was approximately 10,000 gallons, and the exact amount of reagent injected will be included in the Pilot Study Report.

Mr. Miller displayed a slide listing the schedule of events for Building 525. The Pilot Study Report should be available at the end of September 2003, the Revised Feasibility Study (FS) Report in December 2003, the Proposed Plan in March 2004, and the Record of Decision (ROD) in June 2004.

### **Tower Road Site**

Mr. Miller displayed a map depicting the location of the Tower Road Site near Building 361 on Aberdeen Road. Evaluation of the Building 361 underground storage tank (UST) revealed trichloroethane (TCA) and TCE contamination. Building 361 was historically used for instrument cleaning and contained TCE.

Mr. Miller displayed a map depicting TCA and TCE results in monitoring wells located around the UST. Geoprobos were used to reach a consistent clay layer approximately 40 feet below the site, and determine the extent of TCE and TCA contamination. In January 2003, two wells located at each of four points were installed. The A wells are approximately 30 feet deep, and the B wells are 40 feet deep. Substantial concentrations of TCA and TCE were detected at wells 361-4A (TCA - 1,100 ppb, TCE - 2,000ppb) and 361-2A (TCA - 8,800 ppb, TCE - 15,000 ppb).

Mr. Miller displayed a map depicting the Tower Road Site TCVOC plume from March 2003. Wells in the Tower Road plume were sampled in March 2003, and detected mainly low levels of TCVOCs. The second round of sampling was recently completed in September 2003, and the Remedial Investigation (RI) will be accordingly revised.

### **Other Aberdeen Areas Update**

Mr. Miller displayed a slide depicting the locations of the Other Aberdeen Areas. The Draft Final Phase II RI Report was submitted in March 2003 and has been distributed. The Final Phase II RI Report is pending receipt of comments.

Mr. Stachiw stated that when the report for Building 525 is released, the study should be evaluated and a collective decision made as to whether it should be implemented at other areas. The study appeared to enhance TCVOC natural degradation from 13,000 ppb to below 1,000 ppb, and have little effect at concentrations of 400 to 500 ppb. Building 525 is representative of many TCE plumes found at APG,

and the study may be applicable to Aberdeen sites. Implementation of the study is not possible at Edgewood sites affected by 1,1,2,2,-tetrachloroethane (TeCA).

### **Michaelsville Landfill**

Mr. Miller displayed a map depicting the location of Michaelsville Landfill. RAB Members should have received the Michaelsville Landfill Round 3 Report. The ROD for the landfill (source) was signed in 1992. In 1997, a ROD for OU2 was signed. The second ROD concentrated primarily on groundwater, required long-term monitoring, and specified that production wells not be placed within a ¼ -mile radius of the landfill. A monitoring plan was developed and annual (later changed to biannual) sampling for several analytes was implemented for three rounds. The third round results were briefed in 2002, and the report has been generated. The monitoring plan required that all the ROD sampling data be analyzed after five years, or three rounds, of sampling to determine recommendations for future monitoring.

Mr. Miller displayed a map of post-ROD monitoring sampling locations at the landfill. The landfill is approximately 15 to 20 acres in size. Sampling was conducted at six surface water and sediment monitoring locations, four deep wells, and seven shallow wells. Despite stability over an eight-year period, two MCL excursions were reported at the last sampling round; benzene was reported at approximately 8 ppb, and vinyl chloride at 4.3 ppb.

Mr. Miller displayed charts depicting the long-term trends of groundwater, surface water, and sediment analyte classes. In general, analyte classes have stayed constant, and no significant detections have been reported. Iron and manganese have increased in downgradient wells. Ammonia has increased at a significant rate in all groundwater wells, except one. Surface water and sediment data, combined to evaluate the ecological risk assessment for all of Aberdeen, revealed that upgradient water is worse than downgradient water in some locations. The landfill, capped since 1994, is not thought to contribute greatly to the gradient differences. Very low detections were reported for herbicides, dioxins, and furans in the range of parts per trillion (ppt). The MCLs for total dioxins have not been exceeded.

Mr. Miller displayed a slide of recommendations for Michaelsville Landfill. Groundwater sampling frequency should be extended to every five years, with the next sampling event to be scheduled during 2007. Analyte classes sampled should include VOCs, SVOCs, Inorganics, and General Water Quality. Following a holistic review of the ecological risk at the landfill, no further surface water and sediment sampling is recommended.

Mr. Stachiw asked for the groundwater flow rate at the landfill. Mr. Miller stated that the flow rate is 20 feet per year. Mr. Stachiw stated that the very first contaminants at the landfill would have only traveled approximately 600 feet in the 34 years that the landfill has existed. Many contaminants reported in the downgradient area may have been present before cap construction. Due to slow water movement, results from the landfill cap will not be immediately apparent, but may be seen in a decade or more. Sampling should be conducted in real geologic time to account for the slow movement of groundwater.

Mr. Henry asked for the sampling frequency prior to cap construction. Mr. Miller stated that RI sampling began in 1995, and three rounds of post-ROD sampling began in 1997. Mr. Henry asked if sampling frequency has averaged approximately once per year. Mr. Miller stated that approximately six rounds have been completed in eight years, and noted that data prior to 1990 were not used.

Ms. Grochowski asked for the date of the landfill construction, and how the rate of water movement was known before cap construction. Mr. Stachiw stated that the landfill was constructed in approximately 1970, and that groundwater would not have been affected 50 to 60 feet below the surface. Ms.

Grochowski stated that perhaps the rate of water movement was greater before cap construction. Mr. Stachiw acknowledged the possibility. However, contamination formed from 1970 to 1994, and during cap construction, moved slowly downward and outward, and may still be present in the future. Results from the cap construction limiting the amount of contamination from water will not be readily apparent, and water remaining within the landfill may result in contamination being released.

Mr. Henry stated that he was curious about the asterisks used for stable and downward trends in groundwater and surface water, and why text was used to describe sediment trends in the long-term trends tables. Mr. Miller stated that soil results were relatively erratic and that the purpose was to express an idea of the general contamination.

Mr. Henry asked what the low detects mean with regard to dioxins and furans. Mr. Miller stated that the detections were in ppt, and analysis was not conducted for dioxins and furans prior to the ROD. Given a lack of criteria for analysis, totals are evaluated based on toxic equivalents. Mr. Henry noted that dioxins and furans were not recommended for future testing. Mr. Miller stated that the detections were erratic and recommendations were based on the three post-ROD sampling events.

### **Aberdeen Areas Risk Assessment Update**

Mr. John Paul (DSHE Project Officer) provided the risk assessment status update. Responses to comments on the peninsula-wide Human Health Risk Assessment should be completed in the near future. The draft watershed-based Ecological Risk Assessment has been delayed due to a change in risk assessment orientation. The Defense Sites Environmental Restoration Tracking System (DSERTS) sites oriented approach is being implemented.

Mr. Paul displayed a slide summarizing the DSERTS approach. IRP sites in the Aberdeen area, also known as Solid Waste Management Units (SWMUs), are functionally grouped into larger DSERTS sites used by the Army to track remediation progress. For example, landfills are grouped together; ranges are grouped together, etc. Congress uses DSERTS to determine how well installations are making progress on restoration projects, and how funding has been spent. APG has been obliged to remove DSERTS sites by the next calendar year to demonstrate progress to the higher command and Congress. The focus on a peninsula-wide, watershed-wide risk assessment view has been refocused to individual IRP sites and achieving RODs. The watershed approach will not be abandoned, and data generated from the new approach will be used for the peninsula-watershed-wide risk assessment. Remedial investigation (RI) work on surface media will be concluded. IRP sites will be delineated and site-specific clean up numbers will be determined.

Mr. Paul displayed a slide summarizing the DSERTS sites risk assessment. New data gathering efforts will focus on soil, sediment, and surface water. Existing data and data collected in the fall and winter 2003 will be used to complete risk assessments. Where appropriate, Human Health Risk Assessments for each site will implement a streamlined risk ratio approach, as suggested by the EPA. The purpose of this approach is to speed up the risk assessment process.

Mr. Vavra asked for an explanation of the risk ratio approach suggested by the EPA. Mr. Paul stated that the approach was recommended by Ms. Dawn Iovan (EPA) to expedite the review process.

Mr. Henry asked if this is an expedited risk assessment approach used specifically and strictly for areas of known risk meant to eliminate unneeded risk assessments. Mr. Paul stated that Mr. Henry was correct.

Dr. Baier-Anderson asked if a reference to the EPA document could be provided. Mr. Paul stated that a reference could be provided.

Mr. Kalbacher asked if the purpose of the expedited risk assessment is to close out certain sites. Mr. Paul stated that the purpose is to move through the large amount of assessments more quickly. However, assessments will not be done in areas unless all stakeholders have reached a complete agreement.

Mr. Vavra asked for an example of how the process would work. Mr. Paul stated that it is basically similar to the hazard quotient approach. A risk value determined from site concentrations is compared to a number representing the upper limit of acceptable risk.

Mr. Henry stated that he is confused about whether the push is for RODs at individual IRP sites, or for sites grouped under DSERTS to be removed. Mr. Paul stated that the goal is to remove the DSERTS sites. For example, most storage areas on APG have no associated risk or have been cleaned up, with the exception of the Defense Reuse Marketing Office (DRMO). To complete a ROD on all storage areas, efforts would focus on DRMO. Landfills however, are more complicated. However, Mr. Paul expressed confidence that some of those DSERTS sites will be completed.

Mr. Henry expressed concern that pressure to eliminate DSERTS sites would push RODs for more complicated sites. An understanding of the DSERTS groupings, and the priorities of the Army Environmental Center (AEC) are needed. Mr. Paul stated AEC might not have site-specific priorities. The goal is to get everything completed and move forward.

Mr. Vavra expressed concern that he did want to see a change in the whole progress, but was not interested in improving the appearance of AEC's numbers. Mr. Henry stated that he was also concerned with the pressure to reduce the number of open DSERTS sites, and that individual sites may not get sufficient attention regardless of previously dictated investigations. Mr. Henry also questioned AEC's motivations, driving factors, and strength in the process. Mr. Paul stated that AEC's motivation is for APG to get RODs for DSERTS sites through methods determined by APG. Risk and remediation at IRP sites will be investigated. At the DRMO site, previous and future samples will be evaluated, and toxicity testing will be conducted to determine site-specific clean-up levels. A Preliminary Remediation Goal (PRG) will be determined and passed on for recognition with FS.

Mr. Henry expressed concern that activities carried out rapidly can lead to work completed incorrectly. Mr. Paul stated that the majority of work to be conducted is relatively straightforward and basic. Mr. Henry stated that historically there has been a large Army drive to keep long-term operations and maintenance (O&M) follow-up costs low and questioned if that driver still exists from AEC. Mr. Paul stated that it may be, but the driver is mostly oriented towards groundwater.

Dr. Baier-Anderson stated that it seemed as though a body of information from previous groundwater sampling events were simply tabled. Mr. Paul stated that he does not have enough information on groundwater or on individual situations to comment, but stated that every piece of available information would be evaluated to determine the risk basis. Dr. Baier-Anderson stated that it should be realistically considered how the ongoing dispute between the EPA and the Army over land use controls is going to affect the signing of RODs. Mr. Paul stated that such an issue goes beyond his purview.

Mr. Henry asked if RAB Members could be informed of how many unsigned RODs could be expected. Mr. Paul stated that there are 12 DSERTS sites, and no more than 12 RODs could be expected. Mr. Stachiw urged RAB Members to maintain perspective on the issue, and reminded them that they could exert some control over issues.

Mr. Henry stated that he is concerned with AEC's strength, and is uncomfortable with the effect that finances may have on the IRP in the next year. Dr. Baier-Anderson pointed out that in October 2002 she had requested a copy of AEC comments on a document, and was informed that AEC will not grant permission to distribute their comments outside of the Army. AEC refuses to share their comments, and is cutting RAB members out of necessary dialog. Mr. Stachiw stated that regulators need to approve RODs, and that issues are not closed until then.

Mr. Henry stated that he felt the issue still requires discussion. Mr. Stachiw stated that attention should also be paid to the Installation Action Plan, which guides decisions for each site. Mr. Desai stated that sites cannot be closed without RODs. Mr. Vavra stated that the Army needs to resolve issues if the targeted RODs are to be completed. Dr. Baier-Anderson stated that focus must be placed on land use control issues.

Mr. Paul assured RAB Members that corners would not be cut in investigations, activities would not occur without agreement from regulators, and the policy of accommodating concerns would not change. Mr. Henry stated that an increase in people carrying the workload and an in pressure from above without an increase of RAB Members would result in an erosion of quality control. Dr. Baier-Anderson stated that Mr. Henry had a good point and that the needs of the reviewers must be accommodated. Written requests for extended deadlines should be made. Mr. Stachiw stated that AEC must answer to Congress. The question of whether items can be validly completed within a set time frame will arise. AEC is not independent and must answer to Congress and Department of Defense (DOD). Different problems such as agreement to valid solutions for problems, and the speed with which problems are completed need to be sorted out.

Mr. Henry asked if Congress is putting pressure on the Army to clean up sites quickly. Mr. Stachiw stated that he was correct, that efforts would be completed appropriately, and that results are expected. The situation may be advantageous to RAB Members without compromising carrying out actions correctly. Mr. Vavra suggested that agencies are bottlenecked and that ideas should be explored to remedy that situation with respect to more quickly moving the process forward.

Mr. Paul displayed slides listing planned activities for Aberdeen areas. Approximately 10 IRP sites in Aberdeen require substantial work, while at some sites no further action will be proposed based on existing information. Sites with surface contamination present greater ecological risks than human health risks. Fieldwork will commence on sites that require additional data for delineation and development of risk-based PRGs. PRGs will then be used in the FS to determine site-specific cleanup numbers. A work plan will be drafted and completed in the near future.

Dr. Baier-Anderson asked if all the activities are geared solely to ecological risk, or if human risk is also considered. Mr. Paul stated that both ecological and human risk are taken into account, however known contaminants and their distribution present a greater ecological risk than human health risk.

Dr. Baier-Anderson stated that it would be helpful to include all residential and industrial human health criteria in tables for comparison. Mr. Paul stated that an update or meeting could be scheduled to provide a detailed explanation on the risk assessment once the work plan is released. He noted that the Canal Creek area has a completely different organization than Aberdeen Areas, and will be discussed at a later date.

Mr. Henry suggested that the next DSERTS discussion should be held at a RAB meeting, rather than at a working meeting. Mr. Stachiw acknowledged Mr. Henry's request.

## **VII. CLOSING REMARKS**

At 9:45 p.m., after confirming that no one present had further questions, Mr. Stachiw adjourned the meeting. The next APG IRP RAB Meeting will be held on Thursday, 30 October 2003 at 7:00 pm in the Edgewood Senior Center. The tentative topics for discussion are the Graces Quarters and Carroll Island Study Areas.